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Workload Perceptions of Pharmacists: Part of Changing a National Trend

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Background: A National Pharmacist Workforce Survey (NPW) survey is being conducted in the US every five years. The 2009- NPW project surveyed 1,391 participants, of which only 12 participants were from West Virginia. Therefore, such a small representation of West Virginian pharmacists may question the validity of extrapolating the results of the 2009 NPW survey to pharmacists in this state. As a result, a separate survey was needed to answer the questions about the perceived workload, work characteristics, and demographics for West Virginian pharmacists.
Objectives: The primary objective of this investigation was to identify the pharmacists' perceptions of workload in West Virginia and compare with the 2009 NPW survey.
Materials and Methods: A group of pharmacists in West Virginia were surveyed for the perceptions of current workload, the changes of workload over the past year, the impact of workload on personnel satisfaction, and the quality of providing pharmaceutical services. All licensed pharmacists in West Virginia as of 2011 (adjusted to the total of 1970 individuals) were contacted up to three times. Pharmacists' perceptions were measured using several items adopted from the 2009-NPW survey.
Results: A total of 596 responses were received, yielding an adjusted response rate of 30%. The majority of West Virginia pharmacists believed that the current assigned workload was either high or excessively high. This perception follows the trend of the 2009 national manpower study that reported an increase of 14% (between 2004 and 2009) of pharmacists' workload indicating the above fact. Similarly, nearly 61% of pharmacists believed that the workload has either increased or greatly increased over the past year. West Virginia pharmacists were more concerned about their job security, than those were sampled in the 2009 national manpower study. The West Virginia pharmacists perceive their workload to negatively impact the time they spend with patients, the quality of care provided to patients, and their ability to resolve and prevent drug related problems. These negative points on the patient care perception are found to be more pronounced in the current study on the West Virginia pharmacists than it was reported previously in the 2009 national manpower study.
Conclusions: Although there does not seem to be a serious shortage of pharmacists in West Virginia at the present time, pharmacists reported that there are currently more patient care associated tasks need to be completed with the same amount of staffing levels.

Keywords: Health Care Surveys; Personnel Staffing and Scheduling; Health Occupations; Pharmacies; Workload; Pharmacy; Community Pharmacy Services; Education, Pharmacy

1. Background

The first decade of the 21st century has encountered a significant shortage of pharmacists in the United States. The Pharmacy Manpower Project is assembled in 2001 in order to determine the needs for the pharmaceutical services in the United States over the next twenty years. At the end of the Pharmacy Manpower meeting, it was estimated that the supply of pharmacists would fall short of the demand, yielding an anticipated shortfall of 157,000 pharmacists in 2020 (1). In addition, Health Resources and Services Administration indicated in 2000 that the continued growth in the medication usage is expected to outpace the growth in the number of pharmacists (2). Previous research on the community settings found that in the time period between 1992 and 2000, there has been an annual increase of 35% in the total number of prescriptions dispensed (3). It was also reported that over the period of 2007-2012, the drug prescription has grown by an average of 3.4% each year, on top of the annual rate of 35%) (4).

One reaction to this projected demand for pharmacists, has been an unprecedented increase in the number of new schools of pharmacy as well as expanding current pharmacy programs offered by established schools and colleges (5, 6). Before 1987, the number of pharmacy schools in the United States was 72 (7). As of September 2013, there were 130 colleges and schools of pharmacy in the United States with accreditation status, of which 113 are with full accreditation (8). This tremendous growth in the number of schools and colleges of pharmacy in the United States may warrant a revised consideration of the

needs of such educational expansions; especially, for the areas with low population density such as West Virginia in which the needs for pharmacists are of high demand).

In 2005, West Virginia was the only state throughout United States that held an aggregate demand index (ADI) score of 5 (9, 10), which is the maximum score, indicating a high demand for pharmacists and the difficulty of filling pharmaceutical related positions. ADI is an ongoing project sponsored by the Pharmacist Manpower Project since 2000. It provides state, regional, and practice setting indices of national demand for pharmacists. ADI score designates the demand for pharmacists through a score ranging from 1 (High Surplus) to 5 (High Demand). During the past eight years, the ADI for West Virginia, as well as for the entire nation, has trended downward (10). For instance, as of September 2013, both the National and the West Virginia ADI scores were 3.32 and 3, respectively, indicating a rough balance between the demand for pharmacists and supply for pharmaceutical related positions across the entire nation as well as in West Virginia (10). This finding demonstrates that the previous high demand for pharmacists in West Virginia, where it was difficult to fill pharmaceutical related positions, is not the case anymore.

This finding was supported by a recent study of pharmacist workload in West Virginia that compared the pharmacists' workload perceptions in 2005 with those of reported in 2011 (11). The results of that study, which is published in 2013, revealed that only 16.5% of West Virginia pharmacists agreed or strongly agreed that there was a shortage of pharmacists in West Virginia in 2011, whereas 81.5% of national representative pharmacists believed that there was a shortage of pharmacists across the nation in 2005 (11). This study, however, expands more on the topic of workload perceptions by comparing the results of this survey with the 2009-NPW survey. In order to assess the magnitude of pharmacists' workload and its impacts on the personnel satisfaction and the quality of pharmaceutical care, a national survey named the National Pharmacist Workforce.

(NPW) survey is being conducted every five years. The most recent data available from this survey is the one published in 2009 (12). This survey aims at capturing work and demographic characteristics of pharmacists' workforce in the United States. The survey population is represented through contacting a random sample of about 3,000 pharmacists selected from a list of 249,381 licensed pharmacists along the entire United States. The 2009-NPW project surveyed 1,391 participants, of which only 12 participants were from West Virginia (12). Therefore, it is rationalized that such a small representation of West Virginia pharmacists may question the validity of extrapolating the results of the 2009 NPW survey to pharmacists in this state. As a result, a separate survey is conducted to answer the questions about the perceived workload, work characteristics, and demographics of West Virginia pharmacists.

High workload perception may place pharmacists under work pressure, which may influence their aptitude in providing pharmaceutical related health care services. The literature showed that pharmacists' elevated workload acted as a barrier toward patients' counseling (13) and was associated with an increased risk of medications errors (14) such as the possibility of dispensing a potential drug-drug interaction (15). Additionally, a study on a group of Australian pharmacists reported an association between increased workload and more frequent dispensing errors (16). It's been found and investigated by Peterson et al. that the workload is one of the most prominent factors that negatively impacts the pharmacists' performances in both community and hospital pharmacies (17). Similar perceptions were reported by a sample of pharmacists in England as they perceived lowered job satisfaction associated with increasingly growing workload (18, 19), especially in the community pharmacies setting (20). Considering the continuous progression in the roles of pharmacists in the health care sectors (21) and the ongoing growth in prescription volume (4), pharmacists are at increased responsibility for holding more duties and performing more tasks in the scope of their jobs, which is basically translated into increment in workload.

From what has been discussed, it is obvious that investigated pharmacists' perceptions about the workload are important because it may affect pharmacists' abilities to perform their assigned duties and influence their roles as health care providers. In fact, the survey conducted on West Virginia pharmacists indicating that excessive workload, lack of time, and lack of personnel were found to hinder the ability of providing cognitive services such as medication therapy management (22). It's been also found from the previous research that although the pharmacists prefer to devote much of their work time in providing pharmaceutical consultation and drug usage management, they continue to spend nearly fifty percent of their time in medication-dispensing activities (23). This study recommends that employers and managers may be required to pay special attention toward their employees' satisfaction in order to boost up professional productivity, decrease staff turnover, and improve longevity among pharmacists.

2. Objectives

To examine pharmacist workload perceptions and to identify differences in perceptions between national representative and West Virginia pharmacists, this particular survey study aimed at investigating West Virginia pharmacists' perceptions about workload, workload changes, work characteristics, workload impacts on the personnel satisfaction, and the quality of providing pharmaceutical services. Additionally, the results of this study were compared and contrasted with those of the 2009 NPW survey in order to demonstrate the similarities and discrepancies national representative and West Virginia pharmacists' perceptions.

3. Materials and Methods

Prior to this study, the institutional review board (IRB) approval was obtained. A list of licensed pharmacists and their contacts in West Virginia were obtained from West Virginia board of pharmacy. A mailed-survey was sent to all licensed pharmacists in West Virginia. The survey was conducted and data were collected between April 15, 2011, and June 15, 2011. The pharmacists were contacted up to three times (Two surveys and one reminder postcard) in order to maximize the response rate. The initial mailing contained the survey, a personalized cover letter, and a self-addressed postage-paid envelope for returning. To increase the response rate, the second mail was sent out as a non-personalized reminder postcard to non-responders. The reminder was dispatched approximately 2 weeks after the first attempt to ensure the receipt of initial mailing. Finally, the last correspondence was comprised of a survey and a personalized cover letter. It should be noted that, the surveyed items have been adopted from the 2009 NPW ones (12).

To increase the response rate and as a token of appreciation, the pharmacists' names, who had completed the survey, were entered into a drawing for a chance of winning a $50 gift certificate. The pre-testing of the survey was carried out by administering the survey to a convenient sample of five pharmacists whose names were excluded from the sampling frame for the main study. The pharmacists' responses during the pilot study were used to evaluate survey instrument (11).

The participants' perceptions on several points related to the practice of pharmacy profession were assessed. First, current workload was examined by one item using a 5-point Likert response format (Excessively low; Low; about right; High; excessively high). Seconds, the change of workload over the past year was examined by one item using a 5-point Likert response format (Greatly decreased, Decreased, Stayed the same, Increased, Greatly increased). Third, the impact of workload on the personnel satisfaction and the quality of pharmaceutical care were examined using 8 items, using a 5-point Likert response format (Very negative; Negative; Neutral; Positive; Very positive).

Fourth, the survey contained 4 items that examined job security perceived by pharmacists. Participants were asked to respond with "Yes", "No", or "Not applicable" with regard to some job security-related events at their places of employment within the past twelve months. These items examined the following points: pharmacist layoffs, mandatory reductions in pharmacist working hours, early retirement incentives for pharmacists, and reconstruction of pharmacist's work schedules to save labor costs. Finally, the survey included items examining practice characteristics and demographics such as education (PharmD vs. BSPharm), years of practice, gender, current position, working hours (fulltime vs. part-time), age, and postgraduate education. A database structure was created and the responses coded according to the survey code book. Data were extracted from the database and analyzed for this study using descriptive statistics. Statistical analyses of the survey results were conducted using SPSS® program version 16.0. The Data are presented in a manner that allows comparison to the 2009 NPW findings when it was possible.

4. Results

Initially, 1983 surveys were mailed, of which 13 were returned as undeliverable or from retired pharmacists. Therefore, adjusted sample size was 1970. A total of 596 responses were received, yielding an adjusted response rate of 30%. The characteristics of the respondents of both studies are described below in Table 1. Specific findings revealed that gender was almost evenly split, 75% of respondents reported working full time, 77% reported having a B.S. in pharmacy, and about 6% undertook a residency position after graduation. Participants' responses with regard to "pharmacist layoffs", "mandatory reduction in pharmacist hours", "early retirement incentives for pharmacists", and "restructuring of pharmacist work schedules to save labor costs" are described in Table 2. Results showed that 7% of pharmacists reported layoffs comparing to 6% in the 2009 NPW survey. Moreover, 19% of participants reported having mandatory reductions in pharmacist hours in their workplaces within the past twelve months comparing to 13% reported in the 2009 NPW survey. Further, comparing to a percentage of 26% reported in the 2009 NPW survey, 29% of the participants in West Virginia reported a restructuring of pharmacist work schedules to save labor costs within the past year. Lastly, comparing to a percentage of 4% reported in the 2009 NPW survey, only 1% of participants in West Virginia were offered incentives for early retirement.

The results for the participants' responses with regard to perceived workload in their workplaces revealed that 61% of respondents perceived the workload for pharmacists to be high or excessively high. This compares to 68% in the 2009 NPW survey. It is notable that the 2004 NPW survey scored a percentage of 54% for this item, which indicated the change pattern that occurred over the past 5 years. The results for the participants' responses with regard to perceived workload change over the past year revealed that 61% of respondents reported that their workload had increased or greatly increased within this time frame. The same percentage was found in the NPW survey from 2009 as 61% of respondents working full-time reported a workload increase over the past year.

Participants' responses with regard to questions examining the impact of workload on the personnel satisfaction and the quality of pharmaceutical care are shown in Table 3. First, regarding the perceived impact of current workload on the job performance, 35% of participants in West Virginia (only 25% in the 2009 NPW survey) reported that the impact was either negative or very negative.

Table 1. Demographics of the Respondents and Comparisons with the NPW Survey [a, b]

Characteristics	Cases in West Virginia	2009 Nationally Cases
Response rate	596 (30.3)	1564 (33.8)
Gender		
Male	304 (51.1)	795 (54.1)
Female	291 (48.9)	675 (45.9)
Employment		
Full time [c]	444 (75.1)	1169 (79.5)
Part time	146 (24.7)	301 (20.5)
Education		
Residency	35 (5.9)	NR
Fellowship	2 (0.3)	NR
M.S. M.B.A	26 (4.4)	123 (9.2)
Ph.D. program	23 (3.9)	23 (1.7)
Nothing listed	504 (84.8)	888 (66.3)
Degree		
B.S. in pharmacy	429 (72.2)	1047 (71.2)
Doctor of pharmacy	147 (24.7)	273 (18.6)
Combined degrees	18 (3.0)	
Place of employment		
Independent pharmacy	153 (25.9)	222 (15.1)
Chain pharmacy	249 (42.2)	607 (41.3)
Hospital pharmacy	121 (20.5)	363 (24.7)
Clinic-based pharmacy	19 (3.2)	172 (11.7)
Pharmaceutical pharmacy	2 (0.3)	31 (2.1)
Other	40 (7.8)	76 (5.2)
Duration of practice, y [d]		
≤ 5	67 (11.3)	NR
6-10	68 (11.4)	NR
11-15	76 (12.8)	NR
16-20	100 (16.8)	NR
> 20	284 (47.7)	
Age, y		
≤ 30	40 (6.9)	116 (7.9)
30-39	141 (24.2)	326 (22.2)
40-49	143 (24.6)	376 (25.6)
50-59	139 (23.9)	356 (24.2)
> 60	118 (20.3)	293 (19.9)
Current Position		
Owner	66 (11.1)	96 (6.5)
Management	145 (24.4)	423 (28.8)
Staff	359 (64.4)	951 (64.7)

[a] Abbreviations: B.S., bachelor of pharmacy; M.B.A, master of business administration; M.S., master of Sciences; NR, not reported; Ph.D., doctor of philosophy.
[b] Data are presented as No. (%).
[c] Full time defined by having more than 35 hours per week.
[d] The average for duration of practice for 2009 NPW is 11.6 years.

Table 2. Rates of Events in the Workplace of Pharmacists [a]

Statements	Yes	No	Not Applicable
Pharmacist lay offs	42 (7.1)	499 (84.1)	52 (8.8)
Mandatory reduction in pharmacist hours	110 (18.5)	439 (73.9)	45 (7.6)
Early retirement incentives for pharmacist	7 (1.2)	501 (84.5)	85 (14.3)
Restructuring of pharmacist work schedules to save labor costs	169 (28.9)	363 (62.2)	50 (8.6)

[a] Data are presented as No. (%).

Table 3. The Effect of Current Workload on Pharmacists [a]

Effect That Current Level of Workload in the Pharmacy Has on [b]	Negative or Very Negative in West Virginia	Negative or Very Negative 2009 Nationally
Job related		
Job performance	209 (35.4)	226 (25)
Job satisfaction	256 (43.6)	280 (31)
pharmacist related		
Opportunity to take adequate breaks	349 (59.3)	480 (53)
Ability to balance work and personal life	227 (38.8)	335 (37)
Patient care related		
Time spent in contact with patients	315 (54.4)	353 (39)
Quality of care provided to patients	234 (40.4)	244 (27)
Opportunity to solve drug therapy problems	238 (40.5)	262 (29)
Opportunity to reduce potential errors	256 (43.8)	290 (32)

[a] Data are presented as No. (%).
[b] A 5 point scale (1 = very negative, 2 = negative, 3: Neither negative nor positive, 4 = positive, 5 = very positive) was used for each statement.

Second, 54% of participants in West Virginia (only 40% in the 2009 NPW survey) reported not being able to spend adequate time with patients. Third, 40% of participants in West Virginia reported either a negative or very negative impact of workload on the quality of care provided whereas this percentage was only 27% nationally (in the 2009 NPW survey). Fourth, 40% of participants in West Virginia reported a negative or very negative impact of workload on the abilities of solving drug therapy problems whereas this percentage was only 29% nationally (in the 2009 NPW survey). Fifth, 44% of participants in West Virginia reported a negative or very negative impact of workload on job satisfaction whereas only 31% reported the same nationally (in the 2009 NPW survey). Sixth, 44% of participants in West Virginia reported a negative or very negative impact of workload on their abilities to prevent or reduce potential errors whereas only 32% of pharmacists reported the same, nationally. Finally, 59% of

participants in West Virginia reported a negative or very negative impact of workload on taking adequate breaks whereas those who answered the same on the 2009 NPW national survey constituted only 52%.

We also compared "early responders" (the first 300 responses) with "late responders" (the last 296 responses) under the assumption that late responders would be most likely non-responders. Our comparisons showed no statistically significant differences between these two groups for: place of employment, employment type, current position, and gender (Chi-Square P Value > 0.05).

5. Discussion

This study was conducted in order to demonstrate the differences in the perceptions of pharmacists in West Virginia and in the entire -United States. The study focused on 3 major themes namely: job security perceptions, workload assigned to practicing pharmacists, and the impact of this workload on pharmacists' satisfaction with regard to their jobs and their abilities to provide good quality pharmaceutical care. To that, obtaining this information is the first step in examining the underlying reasons for West Virginia pharmacists' perceptions on these themes. As it's already stated in the previous section, the results of this investigation showed similar trend with the 2009 national sample. However, the trends appeared to be moderately more negative in the West Virginia sample, which including reported layoffs and the mandatory reduction of pharmacist work hours. For example, in the 2009 study, 7% of the West Virginia pharmacists reported layoffs and 19% reported mandatory reduction of work hours, compared to 6% and 13%, respectively, in the 2009 investigation. This finding may imply that the perceived economic environment in West Virginia is slightly worse than the economic conditions in the rest of the United States. Workload issues appear to be significantly more negative for the West Virginia pharmacists. The results from both the 2009 NPW survey and the current study showed that 61% of either group believed that pharmacists' workload has increased or greatly increased over the past year. In addition, the majority of both groups believed that the current workload assigned to pharmacists is high or excessively high, which considerably impacted pharmacists' abilities to accomplish other tasks efficiently. For instance, the majority of both groups stated that the workload has restricted the opportunity of having adequate breaks when needed. However, the results were much more pronounced in the West Virginia sample. The data revealed three major areas in which the West Virginia pharmacists perceived the impact of their workload to be more deleterious than the 2009 sample. First, as revealed in Table 3, the West Virginia pharmacists perceived approximately 30% more than the 2009 sample reported that the workload impacts to be negative or very negative on their job performance (35% vs. 25%). Second, 26% more West Virginia pharmacists stated that workload pressures meant that they could not spend adequate time with their patients (54% vs. 40% in the 2009 study). Third, significantly more West Virginia pharmacists stated that the workload pressures negatively impacted the quality of health-care provided. In addition to these differences between two samples, the West Virginia pharmacists stated that the workload issues negatively impacted their job satisfaction and the ability to take bathroom breaks to a significantly greater extent than the 2009 national sample. This suggests that the trend in West Virginia as related to pharmacists' workload perceptions appeared to be much greater than in the rest of the country. Further investigations need to be conducted to determine why that is the case. Perhaps, since West Virginia is a leader in the nation in terms of obesity and diabetes; therefore, more care is necessitated by its pharmacists compared to the rest of the country.

We concluded that the West Virginia pharmacists appeared to perceive more negative impacts on their job satisfaction and the abilities to provide high level patient care services than the 2009 national sample. As a result, these consequences may affect the quality of pharmaceutical care being provided to the population of West Virginia State. Despite the reduction in the pharmaceutical demand during the past several years, the West Virginia pharmacists are at the greater work stress comparing to other pharmacists in the United States. This indicates that even though the pharmacy job openings are not as common as before, and despite the current balance between demand for pharmacists and supply of job openings, the workload and its associated impacts have risen leading to greater work demands on the pharmacists. This consequently increases work-related stress. It appeared that this stress may be greater on our sample of West Virginia pharmacists than the 2009 national sample. This may have been caused by the additional burden (i.e. checking a greater number of prescriptions) being assigned to currently employed pharmacists as opposed to hiring a greater number of pharmacists. Or, perhaps, the West Virginia patients require a greater degree of patient care from their pharmacists due to increased frequencies of diabetes and obesity. In addition, the increased scope of duties and responsibilities assigned to pharmacists may help to explain the negative workload impacts on the West Virginia pharmacists. In other words, employers' expectations of current job seekers are not limited to the provision of pharmaceutical care, but it also includes acquaintance with providing first aid (24), medication therapy management services (25, 26), administering vaccines (27), and pharmaceutical consultation (28). As a result of such changes, new graduates may need to acquire additional skills prior to start applying for jobs in order to be competitive.

There are several limitations to this investigation. The research design of this study was cross-sectional in nature.

Therefore, this limits our ability to assess whether the trend in negative workload perception is significantly rising or falling. This may be especially relevant during the past five years in the United States in which its economy experiences the biggest downturn since the 1930s. Another limitation is the generalizability of our results to other states in the United States. As stated previously, West Virginia State has unique characteristics regarding the severity of chronic disease that are not generalizable to other States. Attesting to this limitation is the fact that the West Virginia sample scored significantly different than the 2009 national sample on several variables of interest. A third limitation has to do with the fact that the laws in West Virginia that govern pharmacy may be different than the laws governing pharmacy in other States and regions. A final limitation has to do with potential nonresponse bias due to the low response rate, because those who responded to the survey may be significantly different on the variables of interest than those who did not. It is optimal to have a high response rate, but where this is not possible; other methods can be employed to limit the nonresponse bias problem. One method, espoused by Churchill, assesses late responders with early responders on variables of interest (29). If late responders are not significantly different than early responders on these variables, then it is unlikely that there is a nonresponse bias. As stated in the results section, nonresponse bias does not appear to be a problem with this investigation. Future research on pharmacists' workload in West Virginia may enable us to look at the changes over time when compared with this study. Additionally, more detailed investigations may provide richer information as to why West Virginia pharmacists appeared to be more negatively impacted by their workload than the country as a whole.

The pharmacists' workload perceptions in West Virginia appeared to be similar to the national's. The West Virginia pharmacists have more sense of job-insecurity, and stronger belief about the detrimental impacts of workload on the personnel satisfaction and the ability to provide good quality health-care services. The results of this study supporting both the ADI data and the 2009 Pharmacist Workforce Study. Despite the amelioration of the pharmacist shortage, the perception among pharmacists is that their workload negatively impacts patient care and their ability to adequately prevent drug related errors for their patients. Based on our study, while there does not appear to be a shortage of pharmacists in West Virginia, pharmacists' health care roles have expanded and they are now required to complete more tasks related to patient care with the same amount of staffing levels.

Authors' Contributions

Fadi Alkhateeb developed the original idea and the protocol, abstracted and analyzed data, and wrote the manuscript. Omar, David, and Rachel contributed to the development of the protocol, abstracted data, and prepared the manuscript.

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